Annex No. 3

The External Evaluation Report of a Doctoral Study Domain

Contents

I. Introduction[1]

The history of education for electric and energy fields in Craiova began in 1951. Then, the Institute for Electrical Machines and Devices was founded, which included the Faculty of Electrical Engineering, and then, in 1953, the Faculty of Electrification of Industry, Agriculture and Transport. Decision no. 894 of the Council of Ministers of 27 August 1965, the faculties of mathematics, chemistry, philology, economics, electrical engineering, agronomy and horticulture were united under the same administration, the University of Craiova. Technical higher education at the University of Craiova began a year ago later, in the summer of 1966, when the first admission competition was organized. Academic 1966 - 1967, the Faculty of Electrical Engineering began its activities with enrolled 100 first-year students, of which 50 in the Department of Electrical Machines and Devices, and the other 50 in the Department of Automation. In the 2nd 011, the faculties of electrical engineering and electromechanics, environment and industrial informatics were reunited under the name of the Faculty of Electrical Engineering. After 1989, the training offer was continuously diversified, currently, the faculty provides preparation for the basic, masters and doctoral cycle in 6 fields of study. The general mission of the field of doctoral studies in electrical engineering is to ensure the development of advanced knowledge corresponding to the third cycle of university studies to publicly present the doctoral thesis and be applicable in the economy. The strategy of the doctoral study of electrical engineering is to develop an educational environment that corresponds to current technological progress, following scientific progress as well as international recognition of research results through scientific papers and scientific projects creating highly qualified human resources.

Mostly made up of the first generation of PhD leaders from Craiova, the second generation of PhD supervisors has emerged. The members of this generation either continued the traditions of the previously developed Doctoral School (Prof. Dr. Eng. Alexandru Bitoleanu, Prof. Dr. Eng. Gheorghe Manolea), or coordinated PhD students in a new field with many interferences with the field of Electrical Engineering - Energy Engineering (Prof. Dr. Eng. Ion Mircea). The 2nd generation was joined by Prof. Dr. Eng. Petre-Marian Nicolae, a teacher at the Faculty of Electrical Engineering Craiova, obtained the title

[1] Each time when applicable the information shall be presented gender-wise.

of Doctor of Engineering at the Polytechnic University of Bucharest and coordinates PhD students in the field of Electrical Engineering. Numerous engineers who have completed their doctorates and have been coordinated by their masters,

Research areas have diversified, emerging new directions: energy/power quality; electromagnetic compatibility, smart grids; control of electric drive systems using modern control techniques; new measurement systems in single- or three-phase systems and development of software programs with applications in the aforementioned fields; new systems/technologies for operating urban, railway and maritime means of transport, etc.

Starting with 2012, a reorganization was carried out by fields at the national level, following which the fields of Electrical Engineering and Energy Engineering were affiliated to the Doctoral School of Technical Sciences at the University of Craiova. Then, in 2015, the fields were separated at the level of the university faculties, the Doctoral School of Electrical and Energy Engineering (SD - IEE) appearing as a distinct entity. Within this, we can speak of the third generation of doctoral supervisors: Prof. Dr. Eng. Sonia Degéré, Prof. Dr. Eng. Sergiu Ivanov, Prof. Dr. Eng. Mihaela Popescu and Prof. Dr. Eng. Sorin Enache.

The goal of the field of electrical engineering is the use of research-innovation in electrical engineering following the interdisciplinary fields of its application. Expanding research at the international level, creating partnerships with quality educational institutions in the country and abroad, research programs, human resources, capitalization of scientific results to develop scientific applications and fundamental research, promoting excellence in electrical engineering, codes of professional ethics, ensuring the right to freedom of opinion, knowledge and religion in the academic community, defense and promotion of fundamental rights and freedoms of members of the academic community, taking care of disabled people, developing diversity and tolerance, taking into account the gender category and developing a strategy of innovation and entrepreneurship in electrical engineering.

We start our mission of evaluation 2.7.2021 from 18:00 – 19:00 Romanian time with a Meeting of panel members for discussing main methodological aspects related to the evaluation of studies. We are talking about evaluation and meet with other members of the same domain of interest.

05.07.2021 continue from 9:00 to 09:45 with an online preliminary meeting for the preparation and harmonization of evaluation steps, in hybrid mode, of doctoral study domains and IOSUD. Together with *all evaluation panel members, representatives of the University's management, representatives of the CSUD and the Doctoral School /Schools, the contact person for IOSUD / doctoral domains*

05.07.2021 continue from 10:00 to 11:00 with Online meeting with the director of CSUD / directors of doctoral schools and the team who drafted the internal evaluation report together with members of the IOSUD evaluation panel, representatives of CSUD and of doctoral school(s)/IOSUD

05.07.2021 continue from 11:00 to 12:00 with Online meeting with IOSUD expert for Engineering sciences- the fundamental domain of science

05.07.2021 continue from 12:15 to 13:15 with Online meeting with IOSUD academic staff, Online meeting with the Directors/ persons in charge of the research centers/laboratories within the doctoral study domain, IOSUD expert for Engineering sciences- the fundamental domain of science

05.07.2021 continue from 13:30 to 14:30 with Online meeting with the Directors/ persons in charge of the research centers/laboratories within IOSUD, IOSUD expert for Engineering sciences- fundamental domain of science,

05.07.2021 continue from 14:30 to 18:00 Continuation of the doctoral study domain and IOSUD evaluation activities, Independent evaluation activities

06.07.2021 continue from 9:00 to 11:00 with Online meeting with the members of the Ethics Commission and the Commission for Quality Evaluation and Assurance (CEAC) members / Quality Assurance Department, all evaluation panel members, Ethics Commission members, representatives of Commission for Quality Evaluation and Assurance (CEAC) / Quality Assurance Department

06.07.2021 continue from 11:15 to 12:15 with Online meeting with PhD students, *IOSUD expert for Engineering sciences- the fundamental domain of science.*

06.07.2021 continue from 12:30 to 13:30 with Online meeting with IOSUD graduates, members of the IOSUD evaluation panel, PhD students, representatives of doctoral graduates

06.07.2021 continue from 13:45 to 14:45 with Online meeting with Doctoral University Studies Council (CSUD) members, Online meeting with employers of Doctoral graduates in the domain, employers' representatives, IOSUD expert for Engineering sciences- the fundamental domain of science

06.07.2021 continue from 15:00 to 16:00 with Online technical meeting to identify specific issues that need to be clarified, if necessary, during the on-site visit, all evaluation panel members

07.07.2021 continue Face-to-face working meetings, visiting the educational and research infrastructure, the Evaluation Director and the coordinator of the IOSUD evaluation panel, one student

08.07.2021 continue from 09:45 to 10:45 with Online meeting with employers of doctoral graduates, members of IOSUD evaluation panel, employers' representatives, IOSUD expert for Engineering sciences- the fundamental domain of science

08.07.2021 continue from 11:00 to 13:00 with Completion of the evaluation documents, Independent evaluation activities

09.07.2021 continue from 9:30 to 10:45 with *Online meeting for conclusions, all evaluation panel members*

09.07.2021 continue from 11:00 to 12:00 with Meeting with representatives of the institution under review to discuss the conclusions of the evaluation process and the main recommendations, all evaluation panel members, university's representatives

II. Methods used

The logical framework, or log frame, is the most common and best-known planning tool used in international development. It is also the most hotly debated. Originally designed for use in simple time-bound projects, it is now the tool of choice for donors in interventions ranging from small projects to organizational core funding. The logical framework is often used as a basis for monitoring and evaluation.

A logical framework can have many different purposes depending on the context, and it is probably this that has made it so popular. It was originally conceived as a planning tool, aimed at supporting the management of planned processes. However, depending on the circumstances, a log frame can be:

- a planning tools.
- a tool for program management.
- the basis for M&E in a project or program.
- an accountability mechanism.
- a succinct summary of a piece of work.
- a 'window' into the work of an organization or complex program.
- a linear theory of change; or
- a mechanism for seeking fundin

This chapter will contain the methods and tools used in the external evaluation process, before and during the evaluation visit, including at least:

Narrative summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Goal:			
Objectives:			
Outputs:			
Activities:			
Inputs:			

Starting with the narrative summary column, the goal defines the longer-term impact that a project or program aims to contribute to. The goal may be designed to be achieved after completion of the project or program and may depend on the actions of many different agencies, as well as changes in the external environment. The next row down deals with the objectives or purpose of the project or program – the changes it hopes to directly influence over its lifetime. The outputs row includes the tangible products or services the project or program aims to produce. The last two rows deal with the activities of the project or program and the resources required (inputs).

The second column – objectively verifiable indicators – defines what information will be collected to indicate whether or how far the goal, objectives and outputs have been achieved. The third column – means of verification – indicates the sources that will be used to collect the indicators, such as interviews, observation, or secondary sources. The final column identifies the key risks and assumptions that might influence the success or otherwise of the project or program.

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

**general description of domain analysis.*

Criterion A.1. The administrative, managerial institutional structures and the financial resources

**general description of the criterion analysis.*

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

**general description of the standard analysis.*

***Performance Indicator A.1.1.1.** The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:*

(a) the internal regulations of the Doctoral School;

(b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;

c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);

d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;

e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;

f) the contract for doctoral studies;

g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

IOSUD -the University of Craiova applies effective mechanisms provided by the relevant law on the organization of doctoral programs, which is reflected in the regulations in force for the third cycle of university studies -doctoral studies:

- *At the level of the Doctoral School of Electrical and Energy Engineering, there is the regulation of organization and functioning of the Doctoral University Study Programs;*
- *The methodology for appointing the members of the Board of the Doctoral School of Electrical and Energy Engineering and the Director of SD IEE is established*
- *The regulation on the organization and conduct of the competition for admission to Bachelor's, Master's and doctoral programs in the academic year 2021 -2022, was approved in the Senate Meeting of April 27, 2021.*
- *The stages and methodology for completing doctoral studies are an integral part of the Institutional Regulation of the organization and functioning of IOSUD doctoral study programs, in Chapter VI, Papers 34-43*

- *At the level of SD IEE, there is a functional management structure: Council of the Doctoral School of Electrical and Energy Engineering -CSD IEE (Anexa A.1.1.1.(f1)_Consiliul SD IEE), elected according to ROFSUD SD-IEE (AnexaA.1.1.1.(b)_ROFSUD_SD_IEE-Chapter II, Art. 3)*
- *Doctoral study contracts were drafted at the IOSUD UCV level. Each doctoral student enters a contract-based relationship with the University of Craiova, at the beginning of doctoral studies.*
- *The doctoral study programs are structured and are carried out following the provisions of the National Education Law*
- *The advanced university training programs (PPUA) are carried out for a maximum period of 3 months, according to art. 57, (7), serving him "for the development in good conditions of the scientific research program and the acquisition of advanced competencies specific to the cycle of doctoral studies";*
- *Each doctoral scientific research program is carried out on the doctoral thesis topic specified in the study contract, the content of the contract being assumed and endorsed by the signatory parties: the doctoral student*
- *Curricula specifying the content of doctoral study programs and the obligations of doctoral students, the evaluation timeline, and the activities evaluated:*

Recommendations:

- *Inside a regulation must be a space open for giving a certificate for every practical stage of doctoral study for PhD students who didn't finish the study for their competition on the labor market.*

The indicator is fulfilled.

Performance Indicator A.1.1.2. *The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.*

- *The Regulation of the Doctoral School of Electrical and Energy Engineering (AnexaA.1.1.1.(b)_ROFSUD_SD_IEE) includes criteria, procedures and mandatory standards for the aspects specified in art.17, par. 5 of HG 681/2011 on the approval of the code of doctoral studies, with subsequent amendments and completions by Articles of the Regulation containing mandatory procedures and standards for the aspects specified in art. 17, paragraph 5 of Government Decision 681/2011 with subsequent amendments*

Recommendations:

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

**general description of the standard analysis.*

Performance Indicator A.1.2.1. *The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic backgrounds.*

- *The University of Craiova has an information system that manages students' activities, study programs, facilitates the collection, processing and analysis of data and information relevant for institutional quality assessment and assurance.*
- *University website (http://ie.ucv.ro/) together with the pages of the faculties and departments provides information on study programs, teaching staff, student facilities, regulations, procedures and other useful documents, announcements of current events and any information relevant to students or prospective students.*
- *University web site is with all information for doctoral and postdoctoral students.*
- *Doctoral school of Electrical and Energy Engineering is presented on web site: http://ie.ucv.ro/index.php?option=com_content&view=article&id=408&Itemid=343&lang=ro*
- *The IOSUD presentation guide is an excellent presentation of the doctoral school. https://www.ucv.ro/pdf/invatamant/educatie/programe_doctorat/organizare/brosura_ro.pdf*

Recommendations:

- *Translated IOSUD presentation of the doctoral school. of Electrical and Energy Engineering https://www.ucv.ro/pdf/invatamant/educatie/programe_doctorat/organizare/brosura_ro.pdf on English.*

The indicator is fulfilled.

Performance Indicator A.1.2.2. *The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.*

- *IOSUD UNIVERSITY OF CRAIOVA uses a dedicated software to verify the similarity index of all doctoral theses, namely www.sistemantiplagiat.ro.The University of Craiova ensures the verification of the authenticity and originality of doctoral theses and other scientific papers with the help of the program www.sistemantiplagiat.ro recognized by the National Council for Attestation of University Degrees, Diplomas, etc..*

Recommendations:

- *If It is possible to include always one expert from a foreign country like an advisor and translates PhD thesis on English. In this way, The University of Craiova has more quality and recognizable research.*

The indicator is fulfilled.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

**general description of the standard analysis.*

Performance Indicator A.1.3.1. *Existence of at least one research or institutional/human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in*

the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.

- *At the level of Electrical Engineering within the Doctoral School of Electrical and Energy Engineering, there is 1 research grant with European funding which includes a doctoral supervisor -Prof. Eng. Petre-Marian Nicolae (field of Electrical Engineering within SD IEE). It takes place within the European project "European Training network of PhD researchers on Innovative EMI analysis and power Applications -" ETOPIA "(period April 2019-2023)*
- *The project is part of "MARIE SKŁODOWSKA-CURIE ACTIONS, Innovative Training Networks (ITN), Call: H2020-MSCA-ITN-2018, European Joint Doctorate EJD".Within the project, the ETOPIA consortium has been established, which includes 6 Universities at the European level (University of Twente -the Netherlands, University of Craiova -Romania, Politecnico di Milano - Italy, Leibniz University -Germany, University of Zielona Gora -Poland, The University of Nottingham -Great Britain) and 18 partners from the business environment or the area of scientific research.-*
- *"Smart solutions to increase security and competitiveness through monitoring, diagnosis, reducing unwanted energy effects and increasing energy efficiency in generation and industrial consumers" (ongoing -2016-2021. Within the Contract and the 5 subsidiary contracts in progress, 4 doctoral students coordinated by Prof. Eng. Petre-Marian Nicolae and one coordinated by Prof. Eng. Sorin Enache.*
- *Intelligent, energy-efficient traction system for new generations of light railway cars"(ongoing - period 2016-2021) (https://poc59.wordpress.com/), Financing contract no. 59/ 05.09.2016; Electronic registration number: ID P_40_401 "Partnerships for knowledge transfer, technological and applied research for innovative solutions of intelligent systems aimed at increasing energy efficiency" (http://www.em.ucv.ro/PACETSINEFEN/) (ongoing -2016-2021)*

Recommendations:

- *University must open grants or use more EU grants for foreign PhD and postdoctoral students to have the possibility to be excellent in education and to increase the internationality of the study of Electrical Engineering.*

The indicator is fulfilled.

Performance Indicator *A.1.3.2. *The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional/human resources development grants is not less than 20%.*

- *Of the 21 Doctoral students in the Doctoral field of Electrical Engineering, 14 are funded from other sources (so, 66.66% of Doctoral students are funded from other sources). Funding sources are either private (in the case of 12 Doctoral students) or provided by other entities (2 Doctoral students).*

Recommendations:

- *In the future is need more private sources for doctoral but more on postdoctoral study.*

The indicator is fulfilled.

Performance Indicator *A.1.3.3.[2] *At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination, etc.).*

- *Doctoral students have big support from doctoral grants for the conference, summer schools, training, publication in ISI papers, etc. This money is more than 10% and in some cases pay 50% from grant to support doctoral activities.*

Recommendations:
The indicator is fulfilled.

Criterion A.2. Research infrastructure

**general description of the criterion analysis.*

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

**general description of the standard analysis.*

Performance Indicator A.2.1.1. *The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases, etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.*

- *The facilities related to the field of Electrical Engineering within SD IEE from IOSUD -UCV allow the development of research activities following the mission and objectives assumed (PCs, specific software, equipment, laboratory equipment, library, access to international databases, etc.).*
- *Through the interdisciplinary platform TEHNOPLAT Oltenia -through which three laboratories for doctoral students were provided with research/testing equipment, computers and peripherals, and software programs dedicated to the field of Electrical Engineering;-*
- *Programs for the fields of Electrical Engineering and Energy Engineering (these are useful for Doctoral students, and access is done through a specialized platform); the equipment can be accessed through ERRIS (https://eeris.eu/ERIF-2000-000H-0270);-through the efforts of some of*

[2] The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.

the doctoral supervisors, high-performance equipment, computers, graphic stations, software programs with new versions were purchased -within research contracts carried out with European funds or through research programs with national funding.

- *The equipment of the laboratories / doctoral supervisor is described in Anexa A.2.1.1.(a) Dotare laboratoare, the available Software and the equipment of the computer laboratories are described in Annex A.2.1.1.(a2) Softuri_Lab_informatice.*
- *Libraries and reading rooms are described in AnexaA.2.1.1.(b) Biblioteci,teaching and research bibliography are described inAnexaA.2.1.1.(c)_Bibliografiadidacticăşidecercetare.the Book fund are described in AnexaA.2.1.1.(d) Fond de carte propriu, Virtual Libraries -AnexaA.2.1.1.(e) Biblioteci_virtuale, Subscriptions to publications and periodicals are listed annex A.2.1.1.(f) Abonamente la publicatii_periodice.*
- *Most of the equipment has been purchased and developed in the last 5 years, within the Research Hub of Applied Sciences INCESA (Anexa A.2.1.1.(g)*
- *IOSUD University of Craiova has concluded collaboration agreements with higher education institutions, research institutes, with research networks for the exploitation in partnership with various research infrastructures.*
- *The offer of research services is presented publicly through the ERRIS platform: https://eeris.eu/ERIF-2000-000H-0270.Collaboration agreements concluded with higher education institutions, research institutes, research networks for the partnership operation of the various research infrastructures are included in Anexa 27_IOSUD_Parteneriate Infrastructura de cercetare.*
- *Also, the RESEARCH INFRASTRUCTURE IN APPLIED SCIENCES (INCESA) of the University of Craiova concluded a series of partnerships through the ERRIS platform (Anexa 28_IOSUD_Conventii_de _cooperare_UCV_INCESAhttps://www.ucv.ro/pdf/cercetare/organizare/dr-msec/Conventii_de_cooperare_UCV_2004-2020.pdf). At the University of Craiova, partnership agreements through the ERASMUS + program, which also include partnerships for doctoral activity are implemented (Anexa A.2.1.2.(a)_Acorduri Erasmus+ si non-Erasmus).*
- *At the level of IOSUD UCV, evidence is presented regarding the possession or renting of spaces for research activities specific to doctoral programs (laboratories, experimental fields, research units, etc.). The summary of the spaces in use of all the faculties of the University of Craiova and implicitly of the students in the third cycle -doctoral studies is presented in Anexa*

Recommendations:
The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

**general description of the criterion analysis.*

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

**general description of the standard analysis.*

Performance Indicator A.3.1.1. *Minimum three doctoral thesis advisors within that doctoral domain and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.*

- *Within the field of Electrical Engineering from SD IEE, 7 doctoral supervisors carry out their activity, 5 of them having doctoral students in different stages of the doctorate. 5 of the doctoral supervisors meet the CNATDCU Minimum Standards (71.43% of the total number of doctoral supervisors)*
- *Of the 7 doctoral supervisors, 4 are full-time teachers and 3 are part-time. Among the 4 full-time teachers, 3 doctoral supervisors meet the CNATDCU Minimum Standards (75% of the holders)*

Recommendations:
The indicator is fulfilled.

Performance Indicator *A.3.1.2. *At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.*

- *Of the 7 doctoral supervisors in the field, 4 are full-time teachers, which represents 57.1%*

Recommendations:
The indicator is fulfilled.

Performance Indicator A.3.1.3. *The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.*

- *The subjects in the training program based on advanced university studies related to the field of Electrical Engineering within SD IEE are supported by teachers who have the quality of doctoral supervisor / habilitated, all teaching staff being Professors -members of SD IEE, with proven expertise in the field of taught subjects.*
- *In the University of Craiova, the occupation of teaching positions is done based on a methodology, approved by the University Senate, in which the conditions for putting up for competition teaching and research positions are provided, for an indefinite or determined period.*

Recommendations:
The indicator is fulfilled.

Performance Indicator *A.3.1.4. *The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs[3] does not exceed 20%.*

[3] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education

- *Within the field of Electrical Engineering from SD IEE, there is only one doctoral supervisor (Nicolae Petre Marian) who coordinates more than 8 doctoral students, so that the percentage 1/7 = 14.28% of the total number of doctoral supervisors*

Recommendations:
The indicator is fulfilled.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.

**general description of the standard analysis.*

Performance Indicator A.3.2.1. *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.*

- *Each of the 7 PhD supervisors in the field of Electrical Engineering within SD IEE has at least 5 Web of Science indexed publications, which include international contributions that reveal progress in scientific research.*
- *The international visibility of doctoral supervisors in the last five years is highlighted in the Minimum Standards Sheets by membership in the scientific committees of international publications and conferences, membership in the boards of international professional associations, guest quality at conferences or groups of experts conducted abroad*

Recommendations:
The indicator is fulfilled.

Performance Indicator *A.3.2.2. *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.*

- *In the case of PhD supervisors in the field of Electrical Engineering within SD IEE, all 7 PhD supervisors continue to be scientifically active (100%).*

No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.

Recommendations:

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

**general description of domain analysis.*

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

**general description of the criterion analysis.*

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

**general description of the standard analysis.*

Performance Indicator *B.1.1.1. *The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*

- *Within IOSUD University of Craiova, the ratio between the number of master's degree graduates from other higher education institutions in the country or abroad who have entered the competition for admission to doctoral studies in the last 5 years and the number of state-subsidized places available at the doctoral schools at least 0.2.*
- *Within SD IEE, in the field of Electrical Engineering, the ratio between the number of Master's degree graduates of other higher education institutions in the country or abroad, who have registered for the competition for admission to doctoral studies in the last 5 years and the number of state subsidized places available at the doctoral school is 0.5.*
- *The ratio between the number of candidates in the last five years and the number of places financed from the state budget in the open competition within the field of doctoral studies is 32/12 = 2.67> 1.2.*

Recommendations:

The indicator is fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

**general description of the standard analysis.*

Performance Indicator *B.1.2.1. *Admission to doctoral study programs is based on selection criteria including previous academic, research and professional performance, their interest in science or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

- *The selection criteria for admission to doctoral study programs are specified in the Doctoral School Regulations*

  Recommendations:
  The indicator is fulfilled.

Performance Indicator B.1.2.2. *The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission[4] does not exceed 30%.*

- *The drop-out rate of doctoral students 2 years after admission does not exceed 30% within IOSUD*

  Recommendations:
  The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

**general description of the criterion analysis.*

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

**general description of the standard analysis.*

Performance Indicator B.2.1.1. *The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*

- *A training program based on advanced academic studies comprises three core courses, one of which refers to the Methodology of scientific research within SD -IEE (Art. 23, paragraph (4) of the ROFSUD SD-IEE REGULATION*

  Recommendations:
  The indicator is fulfilled.

Performance Indicator B.2.1.2. *At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.*

- *In addition to the Ethics and Academic Integrity course, Research Methodology in the Doctoral School -SD IEE provides a subchapter entitled Ethics of research projects.*
- *From 2001 when is found plagiarism on foreign student dissertations, resulting in brake a doctoral supervisor job and student activities at the University, University haven't these problems.*

[4] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.

Recommendations:
The indicator is fulfilled.

Performance Indicator B.2.1.3. *The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities[5].*

- *At the level of Doctoral Electrical Engineering, mechanisms are developed to ensure that the training program based on advanced university studies, related to the evaluated fields, aims at "learning outcomes", specifying the knowledge, skills and abilities that Doctoral students should acquire after going through each subject*

  Recommendations:
  The indicator is fulfilled.

Performance Indicator B.2.1.4. *All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.*

- *All doctoral students benefit during the entire doctoral training period from the counseling/guidance of Advisory committees composed of the doctoral supervisor and three specialists in the field/fields in which the doctoral student carries out his / her activity(Anexa*
- *Based on this questionnaire, the insertion of graduates on the labor market is monitored, as well as the evolution of their level of satisfaction. The questionnaires are processed by the Career Counseling and Guidance Center.*
- *Quality management proposes a model to approach the total quality of services and processes, focused on the procedural and systemic approach, on the total involvement of each employee, and aims at long-term success, by meeting the requirements of internal and external customers and creating benefits for the university and society.*

Recommendations:
The indicator is fulfilled.

Performance Indicator B.2.1.5*. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.*

- *Within the doctoral field of Electrical Engineering from SD IEE, the ratio between the number of doctoral students and the number of teachers/researchers who provide guidance is 21/16 =1.311*

Recommendations:

[5] Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

**general description of the criterion analysis.*

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

**general description of the standard analysis.*

Performance Indicator B.3.1.1. *For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.*

- *The "University of Craiova has a system for the periodic evaluation of teaching, research and management activities that is constantly used, improved from year to year and which has become a basic component in the culture of quality.;*
- *There are competent human resources, organized pyramidally, for each study program; University research has international and national recognition, transparency in the university's ranking among top research universities, based on a large number of research contracts, ISI listed publications, investment in infrastructure and involvement of young researchers, PhD students, postdocs extended;*
- *For the Doctoral field of Electrical Engineering, each doctoral student who was awarded the PhD title in the last 5 years has at least three relevant contributions for his / her area of expertise. In the period 2016-2020, 7 doctoral students were awarded the PhD title and the list of papers contains 60 entries*

Recommendations:

- *Recommendation for Electrical Engineering to insist on applied science papers. In the future Electrical Engineering according to trends in the development of electrical vehicles and renewable energy and waste energy will be a leader of science.*

The indicator is fulfilled.

Performance Indicator *B.3.1.2. *The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.*

- *The 7 doctoral students who were awarded the PhD title in the last 5 years have 34 papers presented at prestigious international scientific events (conducted in the country or abroad). Of these, 33 are international conferences indexed in the IEEE Xplore database.*

Recommendations:
The indicator is fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

**general description of the standard analysis.*

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

- *In the last 5 years, no more than one doctoral thesis per year has been completed for a doctoral supervisor.*

Recommendations:
The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which a minimum of ten doctoral theses have been presented within the past five years should be analyzed.*

- *In the field of Electrical Engineering from SD IEE, in the last five years,7 doctoral theses have been defended.*

Recommendations:
The indicator is fulfilled.

Domain C. QUALITY MANAGEMENT

**general description of domain analysis.*

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

**general description of the criterion analysis.*

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

*general description of the standard analysis.

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

(a) the scientific work of Doctoral advisors;

(b) the infrastructure and logistics necessary to carry out the research activity;

(c) the procedures and subsequent rules based on which doctoral studies are organized;

d) the scientific activity of doctoral students;

e) the training program based on advanced academic studies of doctoral students;

f) social and academic services (including participation at different events, publishing papers, etc.) and counseling made available to doctoral students.

- *The scientific activity of doctoral supervisors was carried out during an academic year. This is the number of publications in relevant journals and the degree of fulfillment of the minimum standards for the award of the habilitation certificate, in force in the academic year subject to evaluation, the number of doctoral students who have completed their studies within three years from the date of enrollment out of the total number of doctoral students and who have publicly defended the thesis.*
- *Infrastructure and facilities necessary for carrying out the research activity is analyzed how the funds of the doctoral school were used to improve the infrastructure and facilities necessary to carry out the research activity in the academic year subject to evaluation like the number of doctoral students financially supported to publish/participate in conferences; organizing symposia, summer schools, etc.*
- *Subsequent procedures and rules based on which doctoral studies are organized like analysis of the degree of fulfillment of the obligations mentioned in the curriculum by the doctoral students coordinated by each doctoral supervisor.*
- *Analysis of the reasons why the doctoral students could not be complete the doctoral program within three years from the date of enrollment.*
- *In the area of concerns for improving the educational process for the third cycle of studies - doctoral studies and for finding the best policies in this regard, is the first National Conference of Organizing Institutions for Doctoral Studies organized by the Council for Studies Doctoral University of IOSUD-University of Craiova, on September 21 -22, 2017, which enjoyed wide participation from universities: https://www.ucv.ro/media/det.php?id=1555*

Recommendations:

Changing on web site new data from 2019 and 2020 year. The website of the University of Craiova must have a lot of changes. All documents must be in Romanian and English. A website is differently organized on different pages.

http://cis01.central.ucv.ro/cercetare/publicatii.php

The indicator is partially fulfilled.

Performance Indicator *C.1.1.2. *Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.*

- *In the University of Craiova there is a Quality Council (CC) led by the rector, coordinated by the vice-rector with quality problems, which has in its structure the Commission for evaluation and quality assurance (CEAC) and the Quality Department (CoC). . The Commission for quality evaluation and assurance and the Quality Department are structured with composition and attributions in the field of quality, approved by the Senate.*
- *Recognition of the professional-scientific value of the members of the academic community*
- *Participation in management commissions and boards and quality assurance of education and scientific research at the national level;*
- *The quality of experts for the evaluation of scientific research projects and programs and educational, at national and international level;*
- *The quality of reviewers or members in the editorial committees of some representative magazines from the main international scientific flow.*
- *The quality of the study was distributed like a questionary. 98% of PhD student was told that is an excellent study.*

Recommendations:
The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

**general description of the criterion analysis.*

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

**general description of the standard analysis.*

Performance Indicator C.2.1.1. *The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:*

(a) the Doctoral School regulation;

(b) the admission regulation;

(c) the doctoral studies contract;

(d) the study completion regulation including the procedure for the public presentation of the thesis;

(e) the content of training program based on advanced academic studies;

(f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;

(g) the list of doctoral students within the domain with necessary information (year of registration; advisor);

(h) information on the standards for developing the doctoral thesis;

(i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

- *Admission to the doctorate is made based on a methodology and a schedule established by the Council for doctoral studies., doctoral studies are carried out in four multidisciplinary doctoral schools.*
- *The Doctoral School of Electrical and Energy Engineering provides all doctoral students with access to the resources necessary to carry out doctoral studies, by:*
  -access to the literature;
  -depending on the topic of the thesis;
  -access to modern research laboratories, which are very well equipped;
  -access to the research teams to which the doctoral students are integrated;
  -access to specialized laboratories at industrial partners -under research and development contracts

  Recommendations:
- *More PhD and postdoctoral PhD study of Electrical Engineering translated to English language.*
  The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

**general description of the standard analysis.*

Performance Indicator C.2.2.1. *All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.*

- *The library of the University of Craiova is a scientific cultural structure, of public law, without legal personality, functioning as a unit related to the University.*
- *Established in 1948 as the Library of the "Tudor Vladimirescu" Agronomic Institute, this is a university library with an encyclopedic profile with a collection of publications of approximately and million volumes, which supports the training process, education and research that primarily serves students, master students, PhD, University teachers and researchers.*
- *The University of Craiova Library. off, access doctoral students to more phases of full-text multidisciplinary scientific data, specialized full-text, bibliographic and bibliometrics (the University of Craiova being a member of the ANELIS PLUS Association): Science Direct Freedom Collection, Springerlink Journals, Cambridge Journals, Ebsco Business Source Complete, American Institute of Physics - Journals (AIP), IEEE/IET Electronic Library (IEL), MathSciNet, Clarivate Analytics - Web of Science Core Collection, InCites Journal Citation Reports, Derwent Innovations Index, Sco pus, both from the university campus based on the recognition of institutional IPs, as well as from outside it (access mobile for PhD students, teachers and researchers).*

Recommendations:
The indicator is fulfilled.

Performance Indicator C.2.2.2. *Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.*

- *Each doctoral student in Electrical Engineering within SD IEE has access, upon request and with the consent of the doctoral supervisor, to an electronic system for verifying the degree of similarity with other existing scientific creations, the University of Craiova and IOSUD -UCV having an electronic system for verifying the degree of similarity: with sistemantiplagiat.ro*

Recommendations:
The indicator is fulfilled.

Performance Indicator C.2.2.3. *All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.*

- *All doctoral students have access to scientific research laboratories or other facilities specific to the field of Electrical Engineering, according to internal rules.*
- *Some doctoral students have access to research laboratories or testing laboratories within companies with which some doctoral supervisors have concluded research contracts*
- *Doctoral students have access, based on ID, to libraries, reading rooms, laboratories, rooms equipped with computers of the faculty, according to the provisions of study contracts and legislation in force on the schooling of all students enrolled in IOSUD -University of Craiova.*

Recommendations:
- *Build virtual joint access laboratory for better online activities of PhD students. This means virtualize real laboratories and give access to students to training in virtual space, before starting real laboratory work.*

The indicator is fulfilled.

Criterion C.3. Internationalization

**general description of the criterion analysis.*

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

**general description of the standard analysis.*

Performance Indicator *C.3.1.1. *IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.*

- *Through the International Mobility and Community Programs Service, the university supports student mobility, especially under the Erasmus program.*
- *From the Erasmus project ETIOPIA "European Training network Of PhD researchers on Innovative EMI analysis and power Applications". https://www.etopia-itn.org/*
- *12 PhD positions have been for PhD students in prestigious Universities Nottingham, Twente, Politehnico Milano, the University of Hanover and the University of Zielona Gora, Poland.*
- *Applications are invited for 12 PhD positions ("Early Stage Researchers") to be funded by the Marie-Sklodowska-Curie Innovative Training Network "ETOPIA - European Training network Of PhD researchers on Innovative EMI analysis and power Applications'' within the Horizon 2020 Programme of the European Commission in area of Electromagnetic Compatibility.*
- *Only one PhD student was included in project ETIOPIA, but more than 50% of Doctoral students published papers on prestige IEE International conference.*

Recommendations:

- *The institution must increase the number of PhD students in Erasmus projects incoming and outgoing abroad. Internationalization is a key to educational success in the future.*

The indicator is fulfilled.

Performance Indicator C.3.1.2. *In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.*

- *Prof. Eng. Frank LEFERINK gave a lecture for doctoral students at SD IEE on "Electromagnetic Interference: a Radiant Future!". The presentation was attended by 8 doctoral students and 4 of the doctoral students who completed their doctoral program for the evaluated period.*
- *Friday 11.06.2021, 11:00, Prof. Remus PUSCA from the Institut Universitaire de Technologie (IUT) of Béthune, Artois University, France, Electrotechnical Systems and Environment Laboratory, will hold a Workshop for PhD students in the fields of Electrical Engineering and Energy on "The use of stray flux analysis in faulted electrical machines.*
- *Within the ETOPIA International Project, the 2 selected doctoral students who carry out their doctoral studies at the University of Craiova within SD IEE will defend their doctoral theses with an international Advisory Committee."*

Recommendations:
The indicator is fulfilled.

Performance Indicator C.3.1.3. *The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees, etc.).*

- *The selection of doctoral students within the ETOPIA 12 doctoral positions in the EU Horizon 2020 Marie Skłodowska-Curie Project ETOPIA"*

- *by presenting the project in tutorials/workshops organized at highly-rated international Conferences, both at European and global level: IEEE EMC Europe 2019 -Barcelona, Spain; IEEE APEMC 2019 -Sapporo, Japan*
- *by posting announcements at partner universities at Marie Sklodowska Curie Project*
- *by presenting the project at the ATEE International Conference 2019, organized at the Polytechnic University of Bucharest between March 28-30, 2019.*

Recommendations:

- *Internationalization is a key for a future for an excellent University. This level of Erasmus, Ceepus and other mobilities must be doubled in the future.*

The indicator is fulfilled.

IV. SWOT Analysis

Strengths: The university remains a regional leader in the field of higher education, through the study programs of Electrical Engineering it offers and the importance of research contracts; The university offers to study a program in an area of Electrical Engineering for a doctorate for full-time, part-time and distance learning; One of the best Doctoral schools at the University of Craiova Electrical Engineering There is an adequate material basis for education and research activities, in continuous improvement and modernization; There are competent human resources, organized pyramidally, for each study program; University research has international and national recognition, transparency in the university's ranking among top research universities, based on a large number of research contracts, ISI-listed publications, investment in infrastructure and involvement of young researchers, PhD students, postdocs extended; The University has adopted and implemented a strategy and operational plan for research and innovation compatible with the latest trends at the European and national level; Research centers have been reorganized; The regulatory framework for	Weaknesses: The low share of research funding from private funds; The low level of attractiveness of the teaching and/or research career; Some areas do not have continuity in doctoral training. Low efficiency of technology transfer in case of research results (with poor funding), in the current economic environment; Insufficient visibility concerning EU universities. An increased level of internationalization is a key for a future for an excellent University.

doctoral and post-doctoral programs was adopted - as institutional and methodological premises for the emergence of research poles; The intensification of the European mobility programs Erasmus, Erasmus +, Erasmus Mundus has continued; The general principles of quality assurance take into account transparency, compatibility and convertibility. In the strategic plan of the University quality is essential and constantly improving; The material base is characterized by the existence of modern equipment for education and research, provides optimal conditions for teaching, as well as practical work in pilot units and experimental stations; All students have access to library services, databases, Internet, dormitory accommodation, social programs, sports facilities, as well as three canteens-restaurants..	
Opportunities: Development of collaboration networks and partnerships with foreign universities; Accessing specific grants for student practice; Collaboration with the economic environment for possible technological transfers, service offers, consultancy, initiation of study programs; The interest was shown by young people from various countries in and outside the European space to pursue doctoral degree programs, through the educational offer in languages of international circulation; Use the HORIZON 2020 strategy to encourage and support the university's research programs; Development of existing partnerships with public institutions and the private environment, with the role of generating new sources of financing; Reconfiguring the relations between the public authorities, the university and the economic environment;	Threats: Funding for higher education and research may lead to insufficient funding for the academic process; Domestic and international competition: open competitions to attract students, quality resources and funds; An aggressive policy of Electrical Engineering in attracting doctoral and postdoctoral students; National legislation that does not stimulate the attraction of foreign students (from outside the EU); A lack of interest of high school graduates for the Doctoral Study; .

Generalization of the values of a culture of quality at the level of university education and research; The existence of a dynamic economic environment that requires graduates; The possibility of accrediting new doctoral fields, full of English language; Development of partnerships with other European universities for doctoral studies; Imposing the organization as a partner for the regional economic and social environment; Requirements for participation in projects with companies and institutions in the area of Electrical Engineering	

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	***A.1.1.1.***	The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain: *(a) the internal regulations of the Doctoral School;* *(b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;* *c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);* *d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;* *e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;* *f) the contract for doctoral studies;* *g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.*	***The indicator is fulfilled.***	Inside a regulation must be a space open for giving a certificate for every practical stage of doctoral study for PhD students who didn't finish the study for their competition on the labor market.
2	***A.1.1.2.***	The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.	***The indicator is fulfilled***	
3	***A.1.2.1.***	The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic backgrounds.	***The indicator is fulfilled***	

4	***A.1.2.2.***	The existence and use of a software program and evidence of its use to verify the percentage of similarity in all doctoral theses.	***The indicator is fulfilled***	Using an international expert in commission for PhD study and always translate doctoral thesis into English.
5	***A.1.3.1.***	Existence of at least one research or institutional/human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.	***The indicator is fulfilled***	University must open grants or use more EU grants for foreign PhD and postdoctoral students to have the possibility to be excellent in education and to increase the internationality of the study of Electrical Engineering.
6	****A.1.3.2.***	The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional/human resources development grants is not less than 20%.	***The indicator is fulfilled***	In the future is need more private sources for doctoral but more for postdoctoral studies.
7	****A.1.3.3.***	At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).	***The indicator is fulfilled***	
8	***A.2.1.1.***	The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above,	***The indicator is fulfilled***	

		which was purchased and developed within the past 5 years will be presented distinctly.		
9	***A.3.1.1.***	Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.	***The indicator is fulfilled***	
10	****A.3.1.2.***	At least 50% of all teaching/research staff involved in teaching/research activities related to training programs for advanced university studies or in individual research/art creation programs have a full-time employment contract for an indefinite period with the IOSUD.	***The indicator is fulfilled***	
11	***A.3.1.3.***	The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.	***The indicator is fulfilled***	
12	****A.3.1.4.***	The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs[6] does not exceed 20%.	***The indicator is fulfilled***	
13	***A.3.2.1.***	At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science - or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including	***The indicator is fulfilled***	

[6] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.

		international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.		
14	***A.3.2.2.**	At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.	***The indicator is fulfilled***	
15	***B.1.1.1.**	*The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*	***The indicator is fulfilled***	
16	***B.1.2.1.**	*Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their*	***The indicator is fulfilled***	

		interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.		
17	***B.1.2.2.***	*The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission[7] does not exceed 30%.*	***The indicator is fulfilled***	
18	***B.2.1.1.***	*The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*	***The indicator is fulfilled***	
19	***B.2.1.2.***	*At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.*	***The indicator is fulfilled***	
20	***B.2.1.3.***	*The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities*	***The indicator is fulfilled***	
21	***B.2.1.4.***	*All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.*	***The indicator is fulfilled***	
22	***B.2.1.5.***	For a doctoral study domain, the ratio between the number of Doctoral students and the number of teaching staff/researchers providing guidance shall not exceed 3:1.	***The indicator is fulfilled***	
23	***B.3.1.1.***	For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain	***The indicator is fulfilled***	*Recommendation for Electrical Engineering to insist on applied science papers. In the future Electrical Engineering according to trends in the development of electrical vehicles and renewable energy*

[7] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.

		for review. At least 3 selected papers must contain significant original contributions in the respective domain.		*and waste energy will be a leader of science.*
24	***B.3.1.2.**	*For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.*	***The indicator is fulfilled***	
25	***B.3.2.1.**	*The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*	***The indicator is fulfilled***	
26	***B.3.2.2.**	*The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*	***The indicator is fulfilled***	
27	***C.1.1.1.***	*The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:* *(a) the scientific work of Doctoral advisors;* *(b) the infrastructure and logistics necessary to carry out the research activity;* *(c) the procedures and subsequent rules based on which doctoral studies are organized;* *d) the scientific activity of doctoral students;* *e) the training program based on advanced academic studies of doctoral students;*	***The indicator is partialy fulfilled***	Changing on web site new data from 2019 and 2020 year. Web site of University of Craiova must have a lot of changes. All documents must be on Romanian and on English. Web site is diferent organised on diferent pages.

		f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.		
28	***C.1.1.2.**	Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.	***The indicator is fulfilled***	
29	***C.2.1.1.***	The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as: (a) the IOSUD/Doctoral School regulation; (b) the admission regulation; (c) the doctoral studies contract; (d) the study completion regulation including the procedure for the public presentation of the thesis; (e) the content of the study programs, based on advanced academic studies; (f) the academic and scientific profile and thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; (g) the list of doctoral students within the school, with necessary information (year of registration; Advisor); (h) information on the standards for developing the doctoral thesis; (i) information on the opportunities for doctoral students aiming to attend conferences, to publish articles, awarding scholarships etc. (j) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.	***The indicator is fulfilled***	*More PhD and postdoctoral PhD studies of Electrical Engineering based on the English language.*

30	***C.2.2.1.***	All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.	***The indicator is fulfilled***	
31	***C.2.2.2.***	Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.	***The indicator is fulfilled***	
32	***C.2.2.3***	All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.	***The indicator is fulfilled***	*Build virtual joint access laboratory for better online activities of PhD students. This mean virtualise real laboratory and give access to students to training in virtual space, before start real laboratory work.*
33	****C.3.1.1.***	IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.	***The indicator is fulfilled***	*Institution must increasing number of PhD students in Erasmus projects incoming and outging abroud.*
34	***C.3.1.2.***	In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.	***The indicator is fulfilled***	
35	***C.3.1.3.***	The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).	***The indicator is fulfilled***	Internationalization is a key for a future for an excellent University. This level of Erasmus, Ceepus and other mobilities must be doubled in the future.

VI. Conclusions and general recommendations

After the full evaluation University of Craiova, Doctoral study of Electrical Engineering, documents and talking with professors, rectors, deans, students and after reading plans and programs, annexes, and all other documents, I have only one decision. Doctoral school is quality. ***34*** *from* ***35*** *indicators are* ***fulfilled****. Only one indicator is* ***partially fulfilled****. These criteria are oriented on looking at the website of the University. This website must be transformed in the same structure and all documents must be in Romanian and English. In the future, the University of Craiova needs more collaboration activities every year according to the Internationalization Doctoral Study. The University of Craiova must in the future period invest in new applications for building virtual platforms and virtual laboratories. Translating all Doctoral studies to the English language will be a big step for the University of Craiova for foreign students.*

Date: 18.7.2021

VII. Annexes

INTELLIGENT, ENERGY-EFFICIENT TRACTION SYSTEM FOR NEW GENERATIONS OF LIGHT RAIL CARS

PROMOTION, IDENTIFICATION AND IMPLEMENTATION OF PARTNERSHIPS FOR THE TRANSFER OF KNOWLEDGE IN THE FIELD OF ECO-NANO-TECHNOLOGIES

Project type: Knowledge transfer partnership
Identifier: POC-A1-A1.2.3-UCV-TRAC-IEE

etopia

Etopia aims for an industrial and scientific cooperation with our partners:

THALES

Nederlandse EMC-ESD Vereniging

IEEE EMC

SOFTRONIC

URSUS Bus

Lambda Engineering

Ekoenergetyka

RSE Ricerca sul Sistema Energetico

CESi Automation S.R.L

RH MARINE

JAGUAR LAND ROVER

ENEA OPERATOR

NETWORK RAIL

ABB

ATKINS CONSULTANTS LIMITED

SOLARIS BUS & COACH

TAURON